

# NAVY PROGRAMS

## AIM-9X Sidewinder Air-to-Air Missile

The AIM-9X Sidewinder Air-to-Air missile is a follow-on to the AIM-9M short-range missile for Air Force and Navy/Marine Corps aircraft. The program was initiated in response to foreign missiles assessed to exceed AIM-9M capabilities. AIM-9X is intended to be a day/night, highly maneuverable, launch and leave missile using passive infrared guidance to engage multiple target types. A new infrared seeker, thrust-vector control actuation system, and signal processor/auto pilot are to provide a High Off-Boresight capability, countermeasures resistance and maneuverability/range improvements relative to the AIM-9M. The AIM-9X is designed to work with any on-board aircraft cueing source, including the Joint Helmet-Mounted Cueing System, which is being developed in a parallel program. The missile retains the AIM-9M warhead, fuze, and rocket motor. Threshold aircraft are the F-15C/D and F/A-18C/D. Future plans call for it to be integrated on the F-16, F/A-18E/F, F-15E, and F-22.

AIM-9X is a joint Navy/Air Force program with the Navy as the Executive Service. The prime contractor, Raytheon Systems Company, bears total system performance responsibility to meet performance specifications derived from the Operational Requirements Document. The Demonstration and Validation phase began in 1994. Operational Test and Evaluation began in August 2002 and the full-rate production decision is scheduled for FY03.

### TEST & EVALUATION ACTIVITIES

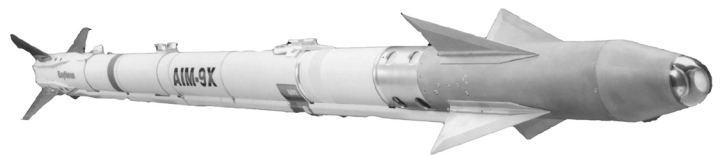
The Operational Test Plan was approved in April 2002. The following month the first operational test shot attempt was terminated for a built-in-test failure prior to launch. As a result, the missile was de-certified for operational test. The contractor implemented hardware and software solutions and the missile was re-certified in July 2002. The Air Force accomplished the first three operational test launches of the AIM-9X seven months after test plan approval. All three were successful. The Navy has yet to accomplish an operational test launch, but plans to have target assets available for a January 2003 first shot.

While minor design problems have contributed to this seven-month test program delay, the most significant delays and corresponding inability of the Navy to test have been caused by test support resource shortfalls. Availability problems with QF-4 target drones, range airspace, and test squadron aircraft continue to delay the program, particularly the Navy's portion.

The operational test Captive Carry Reliability Program (CCRP) has continued since Spring 2002. While the Air Force portion of CCRP has completed over 1200 hours, Navy operational test, due to the aircraft availability issues has fallen further behind, has accumulated only 175 hours. This has put the CCRP nearly 1000 hours behind plan and could result in a low confidence level in reported reliability and maintainability measures. Commander, Operational Test and Evaluation Force is examining other options to increase the Navy captive carry hours.

### TEST & EVALUATION ASSESSMENT

Modeling and Simulation, in conjunction with flight testing, is key to the development and evaluation of the AIM-9X. Due to this missile's planned expanded capabilities and the high cost of launches, a family of simulations is being used to assess missile performance across a wide spectrum of engagements encompassing various threats, backgrounds, and countermeasures.



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Actual missile firings are being used to validate these simulations. The simulations will be used to assess the required Probability of Kill (P ) against the threat targets. Simulation initiatives allow the number of guided test missiles to be significantly reduced.<sup>k</sup> The program has conducted 19 guided missile launches in developmental test and plans 22 shots in operational test. Thus far, the three successful operational test events launches appear to correlate with the models. It is essential that this small shot set continue to correlate to the model's predictions. If test results do not meet operational requirements or do not agree with simulation results, additional test missile firings will be required. DOT&E will continue to monitor this closely.

Test and evaluation support resource shortfalls continue to plague the program. First, due to spare parts, funding, and manning issues, the Navy's test squadron is having difficulty maintaining mission capable F/A-18Cs. In order to accomplish the full complement of AIM-9X test events, some test scenarios will require four F/A-18s. However, the test squadron continues to have difficulty keeping more than one mission-ready aircraft. While the squadron has requested needed funding, manning and spare parts, as of this writing they still have not received adequate resources. Additionally, there are over a dozen other test programs competing for the limited number of F-18 sorties. Second, the QF-4 full-scale target aircraft required for the Navy live shots were grounded for six months after an April 2002 manned QF-4 fatal mishap. Although the Navy re-certified the drones for one year starting October 2002 (after which they intend to close the unit), they were grounded again after an engine anomaly was discovered in the fleet that necessitated a one-time inspection prior to flight. This inspection is expected to be complete by January 2003, at which time the QF-4 operation should be ready to support AIM-9X testing. The QF-4 issue is further complicated by a lack of interoperability between the Air Force and Navy QF-4 drones and range instrumentation systems. This issue highlights a continued problem with test asset interoperability in the Department of Defense. The Air Force and Navy QF-4 drones are not interchangeable—neither can fly on the other's instrumented ranges. In addition, each service's drone fleet has unique maneuvering and telemetry capabilities. Because of these differences, the operational test program for AIM-9X had to be designed and tailored for each drone and range. Neither service's drones are able to accomplish the planned tests or gather the data that is required from the other service's targets.